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(71) Applicant

**Eric Albert Rollinson**  
**16 First Avenue, Bridlington, East Yorkshire,**  
**YO15 2JP, United Kingdom**

(72) Inventor

**Eric Albert Rollinson**

(74) Agent and/or Address for Service

**William Jones**  
**The Crescent, 54 Blossom Street, York, YO2 2AP,**  
**United Kingdom**

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(58) Field of search

**UK CL (Edition K) A6H H17, H4T TBAG**

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(54) **Video spot-the-ball type game**

(57) A system for playing a video spot-the-ball type game comprises at least one video monitor; video generator means for generating multi-frame video signals carrying, in use, sequential images from an event; game play signal generating means for generating a first set of game play signals which represent co-ordinates for a selected target location within one or more of said images and a second set of game play signals which represent co-ordinate for a comparatively broad region encompassing said target; patch generating means responsive to the second set of game play signals for generating a patch obscuring the region encompassing the target during game play; player control means operable by the game player to enable the player to designate his estimate of the location of the target while the target is obscured; and means for comparing the location designated by the player and the location represented by the co-ordinates of the first set of game play signals to register a hit or miss.

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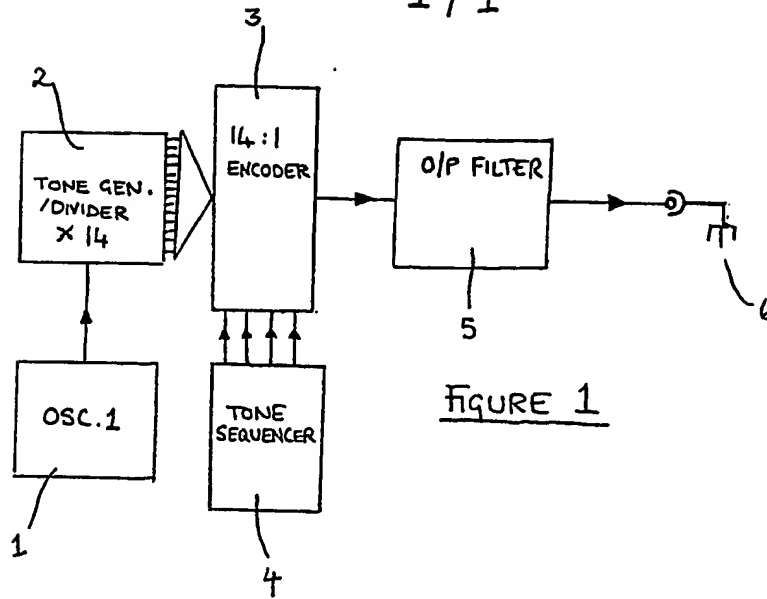


FIGURE 1

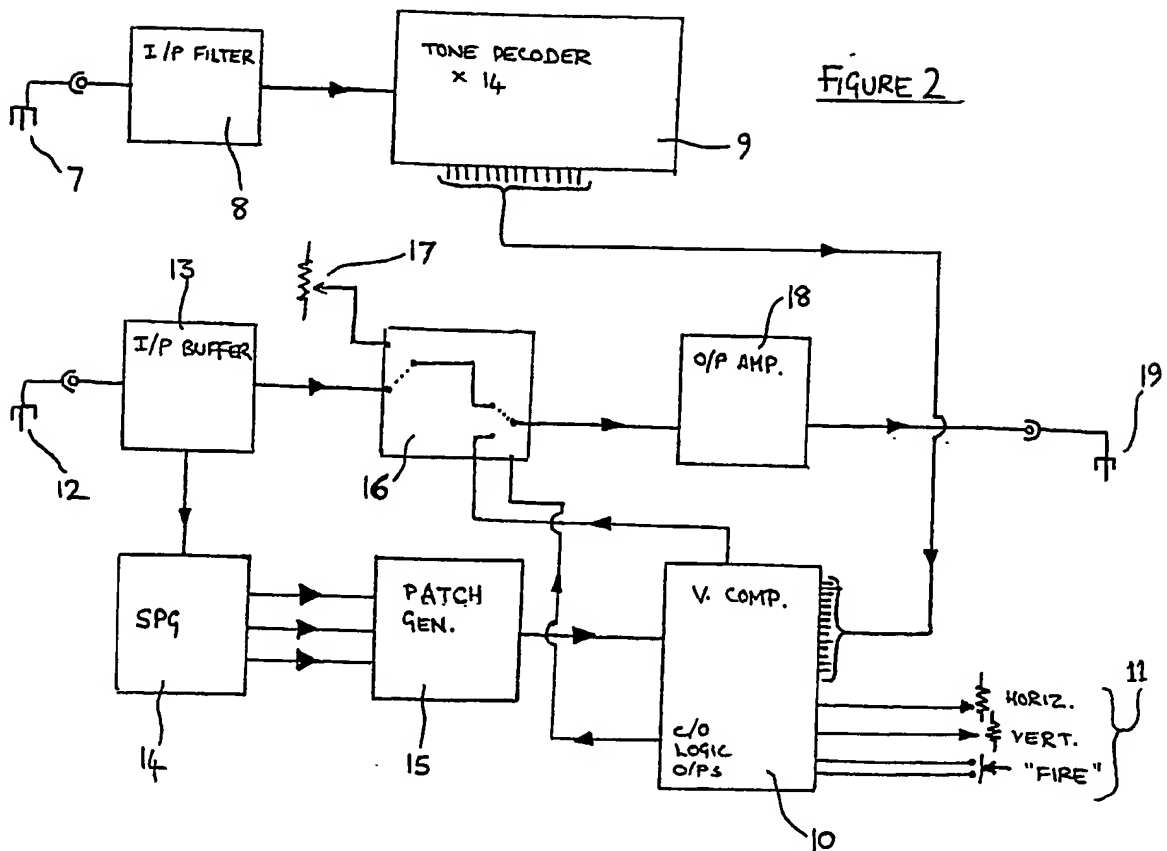


FIGURE 2

APPARATUS FOR PLAYING A VIDEO SPOT-THE-BALL-TYPE GAME

Field of the Invention

5 The present invention relates to apparatus for playing a game of "spot-the-ball", or a game based upon the same principles, making use of a video medium.

Review of Most Relevant Art Known to the Applicant

10 Spot-the-ball is a game of long-standing popularity. The basic principle of the game is to analyse a photograph or drawing of the centre of action in a football, or other ball sport, match in which the position of the ball is obscured or not immediately evident, to determine the position of the ball. The spot-the-ball game has a unique appeal to the multitudes of enthusiasts for a given sport because  
15 accurate assessment of the position of the ball may require good judgement and intimate knowledge of the sport as well as an element of luck. The challenge of the game has made it a popular basis for competitions run in many magazines and newspapers. Even greater  
20 involvement and enjoyment may be had by using the more involving moving medium of video.

Summary of the Invention

According to a first aspect of the present invention there is provided a system for playing a video spot-the-ball type game, which system comprises: at least  
5 one video monitor; video generator means for generating multi-frame video signals carrying, in use, sequential images from an event; game play signal generating means for generating a first set of game play signals which represent co-ordinates for a selected target location  
10 within one or more of said images and a second set of game play signals which represent co-ordinates for a comparatively broad region encompassing said target; patch generating means responsive to the second set of game play signals for generating a patch obscuring the  
15 region encompassing the target during game play; player control means operable by the game player to enable the player to designate his estimate of the location of the target while the target is obscured; and means for comparing the location designated by the player and the  
20 location represented by the co-ordinates of the first set of game play signals to register a hit or miss.

According to a second aspect of the present invention there is provided an amusement machine for playing a video spot-the-ball type game which comprises a video  
25 monitor; a video recording player; patch generating means responsive to game play signals representing co-ordinates for a comparatively broad region encompassing a predetermined target on a video recording of an event for generating a patch obscuring the region  
30 encompassing the target during game play; player control means operable by the game player to enable the player to designate his estimate of the location of the

target while the target is obscured; and means for comparing the location designated by the player and the location of the target.

5 Preferably the patch is randomly or pseudo randomly positioned over the target.

10 Preferably the video frame sequence is frozen at a stage where the game player is to estimate the location of the ball and the patch generating means is synchronised to generate the patch at a stage of the video sequence before the sequence is frozen.

15 In a particularly economical and efficient embodiment the patch generating means is activated by game play signals which are stored on the same storage medium as that on which the sequence of recorded video images are stored prior to game play. The game play signals may be stored as audio tone signals on the audio track of a video tape and the machine further comprises means for decoding the audio tones.

20 Advantageously the patch is removed following game play to reveal the location of the pre-determined target in relation to the location estimated by the player.

The location of the target and the location estimated by the player may each be indicated on the screen of the monitor by a respective marker.

According to a third aspect of the present invention there is provided a component of a system as claimed in Claim 1 for playing a game of video-spot-the-ball, which component comprises a patch generating means for  
5 generating a patch which at a pre-determined stage of game play obscures a comparatively broad region encompassing a pre-determined target within one or more images of a sequence of video images recorded from an event.

10 Brief Description of the Drawings

A preferred embodiment of the present invention will now be more particularly described by way of example and with reference to the accompanying drawings, wherein:

15 Figure 1 represents a generalised circuit diagram of part of a game play signal generating means of the preferred embodiment of the system of the invention.

Figure 2 represents a generalised circuit diagram of a game play signal decoding means and video processing  
20 circuit of the preferred embodiment of the system of the invention.

Description of the Preferred Embodiment

A game of video spot-the-ball is set up using the game play signal generating means part of which is  
25 illustrated in Figure 1, and which comprises a crystal control master oscillator 1 which outputs signals at a rate of 1 MHz to a tone generator/divider 2.

The tone generator/divider 2 outputs 14 discrete tone signals, each representing a game play signal which controls the video processing circuitry, in use. The tones continuously output from the tone generator are selected one at a time by a 14-1 encoding unit 3 provided with a set of manual tone selector switches. An interface with a microprocessor (not shown) linked to a video monitor (also not shown) enables game play signals to be generated which correspond to the position of a selected target, eg football, in one or more frames of a video recording of an event such as a football match.

The signals output from the encoder 3 are sequenced in a serial format by a tone sequencer unit 4. An output filter 5 edge filters the signals from the filter unit 3 and sets the output level. The output signal from output filter 5 is then stored on the audio track of a video tape, or other suitable medium for storing both audio and video signals.

Where the game play signals are to be stored on video tape terminal 6 should be linked to the audio input of a video cassette recorder and terminal 7 linked to the audio output of another video recorder.

The signals from the audio tone generator stored on the tape are subsequently read from the tape by a conventional VCR and fed via an input filter and level adjustment unit 8, to a tone decoder unit 9 and thence to the video processing circuitry.

During the set-up procedure for setting up the system for game play the operator has two video recording players (VCR's or videodisc players). He may trace the movement of the target in a chosen sequence of frames of a particular video recording, frame-by-frame, using any suitable means such as, for example, a light pen. The tone generator/divider 2 may be automatically controlled by the microprocessor receiving digital data corresponding to the co-ordinates of the target from use of the light pen or similar, or may be manually operated and used itself to control the microprocessor to adjust the position of a cursor or other suitable marker on the screen of the monitor.

Respective game play signals encoded by the audio tones suitably represent the x,y co-ordinates of the target in each chosen frame as well as the x,y co-ordinates and size of the patch to cover the target in game play. Additional game play signals are provided to control operation of the amusement machine, initiating play by freezing the video recording and activating the patch generator (see hereinafter).

Logic circuits within the microprocessor may be provided to ensure the patch co-ordinates fully encompass the target to ensure that the target is always effectively obscured at the require time in game play.

Referring to Figure 2, each of the serially arranged signals reaching decoder unit 9 is decoded by one of 14 individual tone decoders within decoder unit 9.



The 14 signals decoded by decoder unit 9 represent, in the preferred embodiment eight data bits four control bits and two enable/reset bits. These bits are fed to a voltage comparator and logic unit 10. Unit 10 provides the interface between the player of the game and the hardware and software dictating the parameters of the game. Player access is via a mouse, or traditional games joy-stick and fire button, 11 linked to unit 10. The mouse 11 enables a player to move a cursor or another marker around the screen of a game play monitor (not shown) and, during a game to register his selection of an estimated location of the ball.

The video signals providing the video medium for the game of the present invention are introduced to the video processing circuitry of Figure 2 from the output of a VCR or similar via input 12. The video signals are buffered, dampened and sync separated by an input buffer unit 13. A signal is output from unit 13 to genlock a sync pulse generator 14, whilst the main video signal is output from buffer unit 13 to a video c/o switch unit 16, thence through an output amplifier 18 to a terminal 19 which feeds into the video monitor. The sync pulse generator 14 feeds to a patch generation unit 15, the output of which is fed to the voltage comparator and logic unit 10.

The video c/o switch unit 16 acts under the control of voltage comparator and logic unit 10, when motion of the video images displayed on the video monitor is frozen, to display the patch dictated by the gameplay signals on the screen of the monitor in place of the target \_\_\_\_\_ and \_\_\_\_\_ surrounding

region. The colour of the patch may be adjusted independently by any suitable means, such as a rheostat.

5 Game play is initiated by the game play control signals  
decoded by decoder unit 9 as control bits. Thus, when  
the game play signals are recorded onto a video  
recording of a sports event and the tape is  
subsequently played back, the game will commence at a  
10 predetermined point in the video recording. The image  
displayed on the video monitor will freeze and a  
darkened or camouflaged patch will simultaneously  
appear over the pre-selected target. The player will  
then use his judgement and recall of movements prior to  
15 the point at which the game commenced to select a  
location where he believes the target lies. The player  
will operate his mouse 11 to designate his selection  
and the comparator and logic unit 10 will assess  
whether the co-ordinates of the player-controlled  
20 cursor match the co-ordinates of the target cursor  
dictated by the game play signals. Should the two  
coincide the unit 10 will display a message on the  
video monitor to indicate a successful hit. Whether  
successful or not, the unit 10 may then reveal the  
25 position of the target cursor alongside the players  
cursor to enable the player to make his own visual  
assessment of his attempt.

The amusement machine apparatus is suitably adapted for use as a gambling machine, providing automatic pay-outs or credits. The machine may be adapted for multi-player use having different on-screen markers for each player. The preferred mode of deployment of the apparatus of the present invention is to make use of the game play signal generator to edit a video recording of a sports match to include the game play instructions and to then disseminate copies of the edited video recording for play back in amusement machines comprising video machines which are retrofitted, incorporated with, or partnered with video processing circuitry of the present invention.

For some sports it is conceivable that the game may be played without the need to freeze the video images. Where the action is frozen, however, this is advantageously timed to occur several (eg 50) frames after the target has been obscured. This will enhance the level of difficulty of the game.

The size of patch and possible use of camouflaging to disguise the position of the patch are factors that may be varied by the apparatus to further vary complexity of the game. Where a given sports event is accompanied by a commentary part of the commentary could be arranged to be erased by dubbing over the audio track of the recording medium with the game play data. However, it may yet be necessary to take extra precautions to erase relevant portions of the commentary. Equally the commentary may provide a valuable contribution to enjoyment of the game in which case the game play signals may be recorded on one of two stereo audio tracks leaving the commentary intact.

Although videotape is currently thought the best medium for storage of the video and game play signals alternative data storage means may be used such as, for example CD ROM or videodisc.

**CLAIMS:**

1. A system for playing a video spot-the-ball type game, which system comprises: at least one video monitor; video generator means for generating multi-  
5 frame video signals carrying, in use, sequential images from an event; game play signal generating means for generating a first set of game play signals which represent co-ordinates for a selected target location within one or more of said images and a second set of  
10 game play signals which represent co-ordinate for a comparatively broad region encompassing said target; patch generating means responsive to the second set of game play signals for generating a patch obscuring the region encompassing the target during game play; player  
15 control means operable by the game player to enable the player to designate his estimate of the location of the target while the target is obscured; and means for comparing the location designated by the player and the location represented by the co-ordinate of the first  
20 set of game play signals to register a hit or miss.

2. An amusement machine for playing a video spot-the-ball type game which comprises: a video monitor; a video recording player; patch generating means responsive to game play signals representing co-  
25 ordinates for a comparatively broad region encompassing a predetermined target on a video recording for generating a patch obscuring the region encompassing the target during game play; player control means operable by the game player to enable the player to  
30 designate his estimate of the location of the target

while the target is obscured; and means for comparing the location designated by the player and the location of the target to register a hit or miss.

5        3. An amusement machine as claimed in Claim 2, wherein the patch is randomly or pseudo randomly positioned over the target.

10       4. An amusement machine as claimed in Claim 2 or Claim 3, wherein the video frame sequence is frozen at a stage where the game player is to estimate the location of the ball and the patch generating means is synchronised to generate the patch at a stage of the video sequence before the sequence is frozen.

15       5. An amusement machine as claimed in Claim 2, 3 or 4, wherein the size of patch is controlled by game play signals to be adjusted to vary difficulty of the game.

20       6. An amusement machine as claimed in Claim 2, 3, 4 or 5 wherein the patch generating means is activated by game play signals which are stored on the same storage medium as that on which the sequence of recorded video images are stored prior to game play.

25       7. An amusement machine as claimed in Claim 6, wherein the game play signals are stored as audio tone signals on the audio track of a video tape and the machine further comprises means for decoding the audio tones.

8. An amusement machine as claimed in any of Claims 2-7, wherein the patch is removed following game play to reveal the location of the pre-determined target in relation to the location estimated by the player.

5 9. A machine as claimed in Claim 8, wherein the location of the target and the location estimated by the player are each indicated on the screen of the monitor by a respective marker.

10 10. A component of a system as claimed in Claim 1 for playing a game of video-spot-the-ball, which component comprises a patch generating means for generating a patch which at a pre-determined stage of game play obscures a comparatively broad region encompassing a pre-determined target within one or more images of a  
15 sequence of video images recorded from a sports event.

11 Apparatus for playing a video spot-the-ball type game substantially as described herein with reference to the accompanying drawings.

**Patents Act 1977**

**Examiner's report to the Comptroller under  
Section 17 (The Search Report)**

Application number

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**Relevant Technical fields**

(i) UK CI (Edition K ) A6H (H17) ; H4T (TBAG)

(ii) Int CL (Edition 5 ) A63F 9/22

Search Examiner

P J EASTERFIELD

**Databases (see over)**

(i) UK Patent Office

(ii) ONLINE DATABASE: WPI

Date of Search

28 APRIL 1992

Documents considered relevant following a search in respect of claims

1 TO 10

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X A	GB 2231189 A (CORK AMUSEMENT)	2, 4, 8-10 1
X	GB 2229371 A (MCARTHUR)	1, 2, 4, 8-10
X	GB 2105560 A (TREND)	1, 2, 4, 8-10



Category	Identity of document and relevant passages	Relevant to claim(s)

### Categories of documents

**X:** Document indicating lack of novelty or of inventive step.

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**&:** Member of the same patent family, corresponding document.

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